Amendments to the Claims:

The following Listing of Claims replaces all prior versions and listings of the claims in this application.

Listing of the Claims

1. (Currently Amended) A biologically-functional, surface-immobilized multilayer structure, comprising a plurality of vesicles sufficiently spaced apart from said surface, wherein the vesicles are directly attached to the structure by binding surface-immobilized linkers with vesicle-attached linkers and optionally by binding vesicle-attached linkers to ~~another vesicle~~ vesicle-attached linkers of other vesicles, wherein the surface-immobilized linkers and the vesicle-attached linkers comprise oligonucleotides and binding of one linker to another linker is mediated through hybridisation of said linker oligonucleotides, and wherein said vesicles comprise a biologically active compound which provides the structure with biological functionality.

2. (Previously Presented) A structure according to claim 1, wherein said vesicles are directly attached to the surface-immobilized linkers with vesicle-attached linkers, so that at least two vesicles are attached to each surface-immobilized linker and wherein each vesicle-attached linker is adapted to bind to said surface-immobilized linker but not to another vesicle-attached linker.

3. (Previously Presented) A structure according to claim 1, wherein the vesicles are attached to said structure by

a) the surface-immobilized linker; and

b) vesicle-attached linkers,

so as to provide said structure with two or more of vesicle layers.

4. (Cancelled).

5. (Currently Amended) A structure according to claim 1, wherein said vesicle-attached linkers are attached to said vesicles via at least one of a hydrophobic anchoring moiety comprised in said vesicle-attached linker and a covalent bond to said vesicle via a functionalised group comprised in said vesicle-attached linker.

6. (Previously Presented and Withdrawn) A structure according to claim 1, wherein said vesicles are coated with an outer shell comprising compounds selected from the group consisting of polyethylene glycol, S-layer proteins, peptides, metal clusters and polymers, or wherein the lipids themselves are linked by polymerisation.

7. (Previously Presented and Withdrawn) A structure according to claim 1, wherein the interior volume of said vesicles comprises compounds selected from the group consisting of ions, dyes, drugs, antibodies, enzymes and other proteins.

8. (Currently Amended) A structure according to claim 1 [[4]], wherein said hybridisation of said oligonucleotides is essentially sequence specific.

9. (Previously Presented and Withdrawn) A structure according to claim 1, adapted for release of said multilayer structure from said surface.

10. (Original and Withdrawn) A structure according to claim 9, designed so that said release is triggered by an electrical potential, light, osmotic stress or incubation with a compound which stimulates said release.

11. (Previously Presented and Withdrawn) A structure according to claim 1, wherein at least two vesicles are attached to each surface-immobilized linker.

12. (Previously Presented and Withdrawn) A structure according to claim 11, wherein each vesicle-attached linker is adapted to bind to the surface-immobilized linker but not to another vesicle-attached linker.

13. (Previously Presented and Withdrawn) A structure according to claim, 12 wherein said surface-immobilized linker comprises at least one non-linker attached region with a biological functionality.

14. (Cancelled).

15. (Previously Presented and Withdrawn) A structure according to claim 12, wherein said non-linker attached region is capable of specific binding with an analyte.

16. (Cancelled).

17. (Previously Presented and Withdrawn) A structure according to claim 12, wherein said vesicle-attached linkers are attached to said vesicles via at least one of a hydrophobic anchoring moiety comprised in said linker, and a covalent bond to said vesicle via a functionalised group comprised in said linker.

18. (Previously Presented and Withdrawn) A structure according to claim 12, wherein said vesicles are coated with an outer shell comprising compounds selected from the group consisting of polyethylene glycol, S-layer proteins, peptides, metal clusters and polymers, or wherein the lipids themselves are linked by polymerisation.

19. (Previously Presented and Withdrawn) A structure according to claim 12, wherein the interior volume of said vesicles comprises compounds selected from the group consisting of ions, dyes, drugs, antibodies, enzymes and other proteins.

20. (Currently Amended and Withdrawn) A structure according to claim 12 ~~16~~, wherein said hybridisation of said oligonucleotides is essentially sequence specific.

21. (Previously Presented and Withdrawn) A structure according to claim 12, adapted for release of said multilayer structure from said surface.

22. (Original and Withdrawn) A structure according to claim 21 designed so that said release is triggered by an electrical potential, light, osmotic stress or incubation with a compound, which stimulates said release.

23. – 32. (Cancelled).

33. (Previously Presented and Withdrawn) A method for producing a surface-immobilised multilayer structure according to claim 1, the method comprising the steps of: (i) providing a surface comprising at least one linker immobilised onto the surface, said surface-immobilised linker(s) being adapted and available for binding to at least one vesicle-attached linker; (ii) providing vesicles, each comprising at least one outwardly projecting linker attached thereto, said vesicle-attached linker being adapted and available for direct binding to a surface-immobilised linker or another vesicle-attached linker, (iii) incubating at least one of the vesicles with the surface under conditions promoting binding of the vesicle-attached linker(s) directly to the surface-immobilised linker(s) or to vesicle-attached linker(s) already immobilised into the structure, resulting in (iv) immobilisation of the vesicle(s) and the linker(s) attached thereto into the structure, which after this step comprises at least one structure-immobilised linker and/or surface-immobilised linker available for binding to another vesicle-attached linker, and (v) repeating the previous step or the previous two steps until the desired amount of vesicles are immobilised into said structure.

34. (Previously Presented and Withdrawn) A method according to claim 33, wherein said surface-immobilised linker comprises at least two sites for binding of vesicle-attached linkers.

35. (Previously Presented and Withdrawn) A method according to claim 34, wherein each vesicle-attached linker is adapted to bind to the surface-immobilised linker but not to another vesicle-attached linker.

36. (Previously Presented and Withdrawn) A method according to claim 33, wherein said surface-immobilised linker comprises only one site for binding of vesicle-attached linkers.

37. (Previously Presented and Withdrawn) A method according to claim 36, wherein each vesicle comprises at least two vesicle-attached linkers.

38. (Cancelled).

39. (Previously Presented and Withdrawn) A method according to claim 33, wherein said vesicle-attached linkers are attached to said vesicles via at least one of a hydrophobic anchoring moiety comprised in the linker, and a covalent bond to said vesicle via a functionalised group comprised in the linker.

40. (Cancelled).

41. (Previously Presented and Withdrawn) A method according to claim 33, wherein said vesicles are coated with an outer shell comprising of compounds selected from the group consisting of polyethylene glycol, S-layer proteins, peptides, metal clusters and polymers.

42. (Previously Presented and Withdrawn) A method according to claim 33, wherein the interior volume of said vesicles comprises compounds selected from the group consisting of ions, dyes, drugs, antibodies, enzymes and other proteins.

43. (Previously Presented and Withdrawn) A method according to claim 33, wherein said surface comprises several surface-immobilised vesicles, which serves as a binding matrix for said structure.

44. (Currently Amended and Withdrawn) A method according to claim 33 ~~38~~, wherein said incubation is performed under conditions promoting sequence specific hybridisation of said oligonucleotides.

45. (Previously Presented and Withdrawn) A method according to claim 33, also comprising the step of releasing compounds from the vesicles.

46. (Original and Withdrawn) A method according to claim 45, wherein said release is triggered by an applied electrical potential osmotic stress or incubation with a compound, which stimulates said release.

47. (Previously Presented and Withdrawn) A method for producing a multilayer structure of a plurality of vesicles, comprising the method according to claim 33, followed by the step of releasing said multilayer structure from said surface.

48. (Original and Withdrawn) A method according to claim 47, wherein said release is triggered by an electrical potential, osmotic stress or incubation with a compound, which stimulates said release.

49. (Previously Presented and Withdrawn) A biosensor, comprising a structure according to claim 1.

50. (Previously Presented and Withdrawn) A biosensor, comprising a structure produced according to claim 33.

51. (Previously Presented and Withdrawn) The biosensor according to claim 50, wherein the formation of said structure is monitored by said biosensor.

52. (Previously Presented and Withdrawn) The biosensor according to claim 49, wherein said biosensor is an optical biosensor, and said structure is used for increasing the signal of said optical biosensor.

53. (Previously Presented and Withdrawn) The biosensor according to claim 49, wherein said biosensor is a mechanical biosensor, and said structure increases a signal of said mechanical biosensor.

54. (Previously Presented and Withdrawn) A method for specifically removing or extracting one or several compounds from a complex solution of compounds, comprising contacting the complex solution with a structure according to claim 1.

55. (Previously Presented and Withdrawn) A method for sensing a release of compounds,

comprising sensing a release of compounds from the vesicles of a structure according to claim 1.

56. (Previously Presented and Withdrawn) The method according to claim 55, wherein said release is triggered by an applied electrical potential, osmotic stress or incubation with a compound, which stimulates said release.

57. (Previously Presented and Withdrawn) The method according to claim 55, wherein said release is used for specific or localised drug delivery.

58. (Previously Presented and Withdrawn) The method according to claim 55, wherein said release is used as a biosensor.

59. (Previously Presented and Withdrawn) The method according to claim 55, for simultaneous analysis of several compounds.

60. (Previously Presented and Withdrawn) A method of imaging, comprising imaging with a structure according to claim 1.

61. (Previously Presented and Withdrawn) A kit of parts comprising chemical compositions appropriate for the production of a surface-immobilised multilayer structure of a plurality of vesicles according to claim 1, comprising linkers vesicles, compounds for attaching said linkers to said vesicles, and compounds for immobilising said linkers to a surface.

62. (Previously Presented and Withdrawn) A kit of parts according to claim 61, also comprising at least one of compounds for attaching biologically active compounds to said vesicles, and biologically active compounds.

63. (New) A structure according to claim 1, wherein the vesicles comprise a biologically active compound selected from the group consisting of membrane proteins, antibodies, functionalized lipids, and coupled water-soluble proteins.

64. (New) A structure according to claim 1, wherein the vesicles comprise biologically active membrane proteins.

65. (New) A structure according to claim 1, wherein the vesicles comprise a biologically active compound selected from the group consisting of drugs, proteins, peptides, and oligonucleotides.